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CONSERVATION OF STEEL IN THE CONTAINERS DIVISION

Prepared For

Roswell C. Mower, Director
Containers Division

by

Program Section

April 13, 1943

CONSERVATION OF STEEL IN THE CONTAINERS DIVISION

Any summary of steel conservation by the Containers Division must be prefaced by a few basic facts.

1. More steel will be required in 1943 for Containers than in any previous year of industry experience.

2. More than 60% of the steel will be used for direct or indirect military packaging for which the main requisite is strength.

3. Basic conservation of steel is dependent upon economical specifications of containers or curtailment of production of items needing a container. Not. the Container Division exercises final determination only on the former.

4. Additional conservation of steel can be realized but is dependent on the availability of machinery for changing packaging lines to substitute packages and the availability of substitute materials such as wood, paper, plastics, and others. But, critical shortages almost prohibit full use of either of these methods.

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The major problem is to meet an increased demand for containers, at least 25% greater than the 1940 capacity of the container industry and at the same time conserve raw materials.

The contemplated use of steel in 1943 for containers is 4,480,700 short tons. Inasmuch as this represents more steel than was ever used by the industry, it is necessary to relate rates of steel consumption in 1943 per container produced to rates of steel consumption in 1940-1941 per container produced. For clarity, the major groups are broken down by importance in steel consumption and net savings fully explained.

METAL TIN CANS

Major savings on this container are accomplished in two ways. Because sanitary cans are difficult to substitute, conservation is concentrated in simplification of sizes or encouraging other types of food preservation. The other main type of conservation concerns "general line" cans; these can be eliminated from civilian use because substitute containers are available.

Estimated savings in the major groups follow:

Foods Available to Civilians and Military

	Cases 24/2's	Steel Used at 1940 Rate (Tons)	Steel Used Actual (Tons)
1942	71,264,000	182,506	182,506
1943	96,396,000	246,383	219,131
	Total net savings through simplifying can sizes.		27,252 Tons

Fruits Available Only to Military *

	Steel (Tons)
Civilian Use in 1940	87,740
Civilian Use in 1943	0
Military Use in 1943	64,475
Total Net Savings	23,265 Tons

* Civilians buy most of these items such as apricots, berries, etc. either dried, frozen, or fresh.

Vegetables and Soups Available to Civilian and Military

	Cases 24/2's	Steel Used at 1940 Rate (Tons)	Steel Used Actual (Tons)
1940	178,849,000	420,349	420,349
1943	211,479,000	601,099	544,433
		Total Net Savings Through Simplifying Can Sizes	56,666

Vegetables and Soups Available Only to Military *

	Steel (Tons)
Civilian Use in 1940	212,711
Civilian Use in 1943	0
Military Use in 1943	107,211
Total Net Savings	105,500

* Civilian buy most of these items such as carrots, beets, etc. either dried, frozen, or fresh.

Many more items have been removed from cans but the saving is brought about by use of substitute containers covered subsequently.

GLASS CONTAINERS

Glass containers are primary substitutes for tin containers because of rigidity and strength; rubber is necessary in substantial quantities if processing is required. Significantly, capacity to produce glass is now short of the metal involved for closures.

Processed Foods in Glass

Vegetables	Steel (Tons)
10,110,000 cases 24/1's	3611
If packed in Sanitary Cans	26592
Net Savings	22981

Fruits	
7,300,000 cases 12/2½'s	2,055
If packed in Sanitary Cans	13,449
Net Savings	11,394

Above figures includes only those fruits and vegetables encouraged by the Containers Division to be packed in addition to small pack in 1940.

Other Products in Glass

	Steel Formerly Use in Cans	Steel Used Now
Lubricating Oils *	131,484	965
Syrups (Corn, etc.)	37,426	1,040
Honey	2,857	215
Baking Powder	1,100	55
Beer	127,000	3,085
Wax, Turpentine, Alcohol	8,252	115
Paint (Only that part in glass)	20,211	395
Anti-Freeze	15,846	198
Polishes, etc.	4,540	79
Miscellaneous	15,520	355
	364,236	6,503

Net Savings 357,733

* Part of the Lubricating oil is sold in all paper containers and some has gone into bulk distribution.

Products in Glass which are allowed No Prime Steel

	1941 Usage of Steel	1943 Use of Steel
Malt and Non Alcoholic Beverages	95,479	65,300 *
Distilled Spirits	8,104	0
Wine	2,137	0
Toilets and Cosmetics	9,992	0
Miscellaneous	300	0
	116,012	65,300 *

Net Savings 50,712

* Reject plate only.
Most of these items now use plastic, wood, or paper closures.

Standardization of jars and closures of glass containers.

Estimated savings by reducing closure sizes.	20,000 Tons

STEEL SHIPPING CONTAINERS

Primary use of these containers is for large unit shipments. The great majority are now used for military shipments only and less critical substitute containers are available to civilians.

Steel Drums	Steel
Products no longer allowed in drums and now packed in wood barrels or fibre drums annually save -	100,000 Tons
Revision of Army specifications on gauge of steel needed for certain products used by Quartermaster and Air Corps will save annually -	295,000 Tons

Fluid Milk Shipping Containers

Standardization of fluid milk shipping containers will save annually -	2,000 Tons

Gas Cylinders

Elimination of new capsules and cylinders for carbonizing water (soda water) will save annually -	4,800 Tons
This does not eliminate soda water but required greater reuse of cylinders now in the industry -	
New techniques developed in cooperation with the industry in machining alloy steel cylinders will save annually -	12,000 Tons

A further saving in Gas Cylinders has been accomplished through increased use of Trailer Tubes - large cylinders on a mobile carriage - which shortens the time of transporting and greatly increases the amount of gas shipped over a given period of time. The saving here is too nebulous to even estimate.

PAPER AND PAPER BOARD CONTAINERS

This group includes all fibre, corrugated, folding and set-up boxes, drums, closures, etc. It is almost impossible to extract the entire savings but listed below are the ones most easily segregated.

Products Previously in Metal Containers But Now in Paper Containers

	Previous Usage of Steel	Use of Steel in 1943
Tobacco and Snuff	63,000	0
Paint (That part not in glass)	70,206	28,200
Powder (Talc, etc.)	10,105	0
Auto Supplies	1,610	0
Cosmetics	1,302	0
Dry Chemicals	8,072	807
Coffee	89,115	0
Lard and Shortening	58,136	0
Miscellaneous (Mostly food)	94,347	3,800
Amount needed to pack Military requirements of these items		19,479
TOTALS	395,893	52,286

Net Saved Annually 343,607 Tons

V-Box Program for substituting weatherproof paper shipping cases for wood cases for off-shore shipments.

1943 Program	Steel - Tons
275,000,000 cases - if wood	20,625
275,000,000 cases - V-Box	4,297
Net Savings Annually	16,328 *

Savings arise in savings on nails vs. staples only. Steel strapping is assumed to be the same for both.

The above program is the only substitution of paper shipping cases for wood that is measureable at this time. Obviously, many more substitutions have taken place effecting further savings, but again, these are difficult to measure.

Stitching has been eliminated on all shipping cases (paper) where possible. Annual savings should reach - 3,000 Tons

Fibre Drums

These drums are largely for replacement of many steel drums. Production is currently around 30,000,000 per year, ten times as great as in 1940. Listed below are savings in addition to those listed under steel drums on items formerly in steel drums, pails, etc., or increased production of items over the rate of 1941 and which normally would require steel shipping containers.

	Number of Drums	Savings in Steel (Tons)
Food	2,700,000	27,000
Paints	10,000,000	25,000
Chemicals	6,000,000	54,000
		106,000

WOODEN CONTAINERS

Lumber for wood containers as well as all other uses will probably remain in critical supply for the duration of the war. Military demands are tremendous. Hence, savings on steel are commensurate with the number of units produced. In general, civilian needs have had to be shortened and made up in paper. Reuse has helped considerably and, of course, saved steel. Not all of these savings can be measured. The measureable savings are as follows.

	Steel
Nailed Wooden Boxes	
In addition to the W-Box program specifications are standardized and result in an annual savings of -	6,500 Tons
Wirebound Boxes	
Standardized gauge of wire results in a savings annually of -	2,000 Tons
Plywood Drums	
Substitution for steel drums annually saves. (In addition to savings previously given) -	3,000 Tons
Light Cooperage	
Reduction of number of hoops from 8 to 6 and reduction of gauge of hoops on some large barrels saves annually -	11,000 Tons
Slack Cooperage	
Substitution of wood for metal hoops should save annually -	6,000 Tons
Shipping Sacks - Textile and Paper	
Some savings have been realized by substituting shipping sacks for metal and part-metal containers. Annual savings amount to -	3,000 Tons

All estimates in the foregoing are non-duplicating as far as can be determined. There are steel savings in addition to all of these savings but in the opinion of the Containers Division they are impossible to accurately estimate.

In Summary:

Type of Container		(Tons) Steel Savings Per Year
Metal Cans		212,683
Glass		462,820
Steel Shipping		
Drums	395,000	
Fluid Milk	2,000	
Gas Cylinders	16,800	
		413,800
Paper and Paperboard		
Drums	106,000	
V-Box Program	16,328	
All Others	346,607	
		468,935
Wood		
Nailed Wood	6,500	
Wirebound	2,000	
Drums	3,000	
Tight Cooperage	11,000	
Slack Cooperage	6,000	
		28,500
Shipping Sacks (Textile and Paper)		3,000
		1,589,738

This savings represents 35.5% of all the steel to be used by the Containers Division and 2.5% of the total finished steel output of the United States.

Seventeen orders, eleven of which are conservation (M) type, one priority and five limitation type, are in effect to bring about this saving of steel. However, many of the orders accomplish much more than just saving steel. One order saving but 80 tons of steel for collapsible tubes saves 4,000 tons of tin - 4% of the total U. S. requirements. Millions of board feet of lumber are saved by other orders. An order affecting grocers bags saved less than 100 tons of steel yet it saves more than 80,000 tons of critical Kraft paper.

Of major importance is that few container manufacturers have been forced out of business. Many users have been more seriously effected but not for long. It is the considered objective of the Container Division to regulate types of containers in as equitable a manner as the circumstances of war permit and to regulate as little as necessary.

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